wherein, said second lens band smoothly moves toward the third lens band and said fourth lens band moves from the fifth lens band side toward a long focal point end so as to share a magnifying function together with the second lens band, when magnification is performed from short to long focal point ends; and

wherein a distance (D_{1W}) between the first and second lens bands in the short focal point end arrangement, a distance (D_{1T}) between the first and second lens bands in the long focal point end arrangement, a distance (D_{3W}) between the third and fourth lens bands in the short focal point end arrangement, and a distance (D_{3T}) between the third and fourth lens bands in the long focal point end arrangement substantially meet the following inequality:

$$(D_{3W} - D_{3T}) / (D_{1T} - D_{1W}) > 0.3.$$

2. (Amended) The apparatus according to claim 1 wherein the first lens band faces an object to be photographed.

3. (Amended) The apparatus according to claim 1 wherein said fourth lens band comes closest to the third lens band at a focal length slightly before the long focal point end.

4. (Amended) A camera apparatus comprising a zoom lens, said zoom lens comprising:

a first lens band having a positive focal length;

a second lens band having a negative focal length;

at least third to fifth lens bands having positive focal lengths; and

an aperture diaphragm located in the vicinity of the third lens band;

wherein, said second lens band smoothly moves toward the third lens band and said fourth lens band moves from the fifth lens band side toward a long focal point end so as to share a magnifying function together with the second lens band, when magnification is performed from short to long focal point ends; and

48

wherein a variance of an image surface caused by the smooth movements of said second and fourth lens bands is compensated by movement of the fifth lens band in a predetermined direction.

26. 31. (Amended) A method for zooming, comprising the steps of:

providing a first lens band having a positive focal length;

providing a second lens band having a negative focal length;

providing at least third to fifth lens bands having positive focal lengths; and

providing an aperture diaphragm located in the vicinity of the third lens band;

smoothly moving said second lens band toward the third lens band;

substantially simultaneously moving said fourth lens band from the fifth lens band side toward a long focal point end so as to share a magnifying function together with the second lens band when magnification is performed from short to long focal point ends;

further comprising the step of compensating a variance of an image surface caused by the smooth movements of said second and fourth lens bands with movement of the fifth lens band in a predetermined direction.

27. 32. (Amended) The method according to claim 26 31, further comprising the step of fixing said first lens band when said magnification is performed.

28. 34. (Amended) The method according to claim 26 31, further comprising the step of performing focusing with the fifth lens band when said magnification is performed.

29. 36. (Amended) The method according to claim 26 31, further comprising the step of focusing at a shorter distance than an ordinal photographing region by moving the fifth lens band in a predetermined direction in any one of the ordinal photographing region and the macro mode.

30. 37. (Amended) The method according to claim 31, further comprising the step of positioning said fourth lens band in a macro mode substantially close to the fourth lens band in the long focal point end arrangement for the macro mode.

31. 38. (Amended) The method according to claim 31, further comprising the step of positioning said second lens band substantially closer to the image surface than when it is in the short focal point end arrangement for the macro mode.

32. 41. (Amended) A camera apparatus comprising zoom means for performing zooming, said zoom means comprising:

first means for deflecting a light, said first means having a positive focal length;

second means for deflecting the light, said second means having a negative focal length;

at least third to fifth means for deflecting the lights, said at least third to fifth means having positive focal lengths; and

means for narrowing the light in the vicinity of the third means;

wherein, said second means smoothly move toward the third means and said fourth means move from the fifth means side toward a long focal point end so as to share a magnifying function together with the second means when magnification is performed from short to long focal point ends; and

wherein said fifth means perform focusing during zooming.

Please add the following claims:

33. 48. A mobile information terminal, comprising a camera apparatus having a zoom lens, said zoom lens comprising:

a first lens band having a positive focal length;

a second lens band having a negative focal length;

at least third to fifth lens bands having positive focal lengths; and

an aperture diaphragm located in the vicinity of the third lens band;

wherein, said second lens band smoothly moves toward the third lens band and said fourth lens band moves from the fifth lens band side toward a long focal point end, when magnification is performed from short to long focal point ends; and

wherein a variance of an image surface caused by the smooth movements of said second and fourth lens bands is compensated by movement of the fifth lens band in a predetermined direction.

44. A zoom lens, comprising:

a first lens band having a positive focal length;

a second lens band having a negative focal length;

at least third to fifth lens bands having positive focal lengths; and

an aperture diaphragm located in the vicinity of the third lens band;

wherein, said second lens band smoothly moves toward the third lens band and said fourth lens band moves from the fifth lens band side toward a long focal point end, when magnification is performed from short to long focal point ends; and

wherein a variance of an image surface caused by the smooth movements of said second and fourth lens bands is compensated by movement of the fifth lens band in a predetermined direction.

45. The apparatus according to claim 43, wherein said first lens band is immobile.

46. The apparatus according to claim 43, wherein said third lens band and aperture diaphragm are immobile.

47. The apparatus according to claim 43, wherein the fifth lens band performs focusing.

48. The apparatus according to claim 43, wherein

a focal length (f_1) of the first lens band, and a composite focal length (f_{12T}) of the first and second lens bands at the long focal point end substantially meet the following inequality:

$$-1.4 < (f_{12T} / f_1) < -1.0.$$

49. The apparatus according to claim 43, wherein a composite focal length (f_{12W}) of the first and second lens bands at the short focal point end, a composite focal length (f_{12T}) of the first and second lens bands at the long focal point end, a focal length (f_T) of the entire lens unit at the long focal point end, and a focal length (f_W) of the entire lens unit at the short focal point end substantially meet the following inequality:

$$0.4 < (f_{12T} / f_{12W}) / (f_T / f_W) < 0.7.$$

50. The apparatus according to claim 43, wherein each of said lens bands includes less than three lenses, said second and third lens bands include at least one non-spherical surface, and at least one of said fourth and fifth lens band includes more than one non-spherical surface.

51. The apparatus according to claim 43, wherein said first to third and fifth lens bands include less than three lenses, said fourth lens band includes four lenses, each of said second and third lens bands includes at least one non-spherical surface, and at least one of said fourth and fifth lens band includes more than one non-spherical surface.

52. The apparatus according to claim 43, wherein said fifth lens band includes only one lens.

53. The apparatus according to claim 43, wherein said aperture diaphragm is located at the object side of the third lens band.

54. The apparatus according to claim 43, further comprising a function of digitizing a photographed image into digital information.

55. The apparatus according to claim 54, further comprising a photo acceptance unit configured to receive an image from the zoom lens, said photo acceptance unit having almost three million pixels.

56. The apparatus claimed in claim 52, said zoom lens further comprising a macro mode capable of focusing at a shorter distance than an ordinal photographing region, wherein said focusing is performed by movement of the fifth lens band in a predetermined direction in any one of the ordinal photographing region and the macro mode.

57. The apparatus according to claim 56, wherein said fourth lens band in the macro mode is substantially close to the fourth lens band in the long focal point end arrangement.

58. The apparatus according to claim 56, wherein said second lens band in the macro mode is substantially closer to the image surface than when it is in the short focal point end arrangement.

59. The apparatus according to claim 56, wherein said fourth lens band in the macro mode is close to the fourth lens band in the long focal point end arrangement, and wherein said second lens band in the macro mode is closer to the imaging surface than when it is in the short focal point end arrangement.

60. The apparatus according to claim 56, wherein the first and third lens bands and the aperture diaphragm are immobile with regard to the image surface.

61. The apparatus according to claim 56, wherein a distance (L_{1W}) between the first and second lens bands in the short focal point end arrangement, a distance (L_{1T}) between the first and second lens bands in the long focal point end arrangement, a distance

(L_{1C}) between the first and second lens bands in the macro mode substantially meet the following inequality:

$$0.15 < (L_{1C} - L_{1W}) / (L_{1T} - L_{1W}) < 0.40.$$

62. The apparatus according to claim 56, wherein a distance (L_{3W}) between the third and fourth lens bands in the short focal point end arrangement, a distance (L_{3T}) between the third and fourth lens bands in the long focal point end arrangement, a distance (L_{3C}) between the third and fourth lens bands in the macro mode substantially meet the following inequality:

$$0.25 < (L_{3C} - L_{3W}) / (L_{3W} - L_{3T}) < 0.50.$$

63. The apparatus according to claim 56, wherein a distance (L_{1W}) between the first and second lens bands in the short focal point end arrangement, a distance (L_{1T}) between the first and second lens bands in the long focal point end arrangement, a distance (L_{1C}) between the first and second lens bands in the macro mode substantially meet the following inequality:

$$0.15 < (L_{1C} - L_{1W}) / (L_{1T} - L_{1W}) < 0.40$$

and wherein a distance (L_{3W}) between the third and fourth lens bands in the short focal point end arrangement, a distance (L_{3T}) between the third and fourth lens bands in the long focal point end, a distance (L_{3C}) between the third and fourth lens bands in the macro mode substantially meet the following inequality:

$$0.25 < (L_{3C} - L_{3W}) / (L_{3W} - L_{3T}) < 0.50.$$

64. The apparatus according to claim 56, wherein said first to third and fifth lens bands include less than three lenses, said fourth lens band includes four lenses, each of said second, third and fifth lens bands includes at least one non-spherical surface, and the fourth lens band includes more than two non-spherical surfaces.

65. The apparatus according to claim 56, wherein said third lens band includes one lens, and said aperture diaphragm is located at the object side of the third lens band.

66. The apparatus according to claim 44, wherein said first lens band is immobile.

67. The apparatus according to claim 44, wherein said third lens band and aperture diaphragm are immobile.

68. The apparatus according to claim 44, wherein the fifth lens band performs focusing.

69. The apparatus according to claim 44, wherein a focal length (f_1) of the first lens band, and a composite focal length (f_{12T}) of the first and second lens bands at the long focal point end substantially meet the following inequality:

$$-1.4 < (f_{12T} / f_1) < -1.0.$$

70. The apparatus according to claim 44, wherein a composite focal length (f_{12W}) of the first and second lens bands at the short focal point end, a composite focal length (f_{12T}) of the first and second lens bands at the long focal point end, a focal length (f_T) of the entire lens unit at the long focal point end, and a focal length (f_W) of the entire lens unit at the short focal point end substantially meet the following inequality:

$$0.4 < (f_{12T} / f_{12W}) / (f_T / f_W) < 0.7.$$

71. The apparatus according to claim 44, wherein each of said lens bands includes less than three lenses, said second and third lens bands include at least one non-spherical surface, and at least one of said fourth and fifth lens band includes more than one non-spherical surface.

72. The apparatus according to claim 44, wherein said first to third and fifth lens bands include less than three lenses, said fourth lens band includes four lenses, each of said

second and third lens bands includes at least one non-spherical surface, and at least one of said fourth and fifth lens band includes more than one non-spherical surface.

73. The apparatus according to claim 44, wherein said fifth lens band includes only one lens.

74. The apparatus according to claim 44, wherein said aperture diaphragm is located at the object side of the third lens band.

75. The apparatus according to claim 44, further comprising a function of digitizing a photographed image into digital information.

76. The apparatus according to claim 75, further comprising a photo acceptance unit configured to receive an image from the zoom lens, said photo acceptance unit having almost three million pixels.

77. The apparatus claimed in claim 73, said zoom lens further comprising a macro mode capable of focusing at a shorter distance than an ordinal photographing region, wherein said focusing is performed by movement of the fifth lens band in a predetermined direction in any one of the ordinal photographing region and the macro mode.

78. The apparatus according to claim 77, wherein said fourth lens band in the macro mode is substantially close to the fourth lens band in the long focal point end arrangement.

79. The apparatus according to claim 77, wherein said second lens band in the macro mode is substantially closer to the image surface than when it is in the short focal point end arrangement.

80. The apparatus according to claim 77, wherein said fourth lens band in the macro mode is close to the fourth lens band in the long focal point end arrangement, and wherein said second lens band in the macro mode is closer to the imaging surface than when it is in the short focal point end arrangement.

81. The apparatus according to claim 77, wherein the first and third lens bands and the aperture diaphragm are immobile with regard to the image surface.

82. The apparatus according to claim 77, wherein a distance (L_{1W}) between the first and second lens bands in the short focal point end arrangement, a distance (L_{1T}) between the first and second lens bands in the long focal point end arrangement, a distance (L_{1C}) between the first and second lens bands in the macro mode substantially meet the following inequality:

$$0.15 < (L_{1C} - L_{1W}) / (L_{1T} - L_{1W}) < 0.40.$$

83. The apparatus according to claim 77, wherein a distance (L_{3W}) between the third and fourth lens bands in the short focal point end arrangement, a distance (L_{3T}) between the third and fourth lens bands in the long focal point end arrangement, a distance (L_{3C}) between the third and fourth lens bands in the macro mode substantially meet the following inequality:

$$0.25 < (L_{3C} - L_{3W}) / (L_{3W} - L_{3T}) < 0.50.$$

84. The apparatus according to claim 77, wherein a distance (L_{1W}) between the first and second lens bands in the short focal point end arrangement, a distance (L_{1T}) between the first and second lens bands in the long focal point end arrangement, a distance (L_{1C}) between the first and second lens bands in the macro mode substantially meet the following inequality:

$$0.15 < (L_{1C} - L_{1W}) / (L_{1T} - L_{1W}) < 0.40$$

and wherein a distance (L_{3W}) between the third and fourth lens bands in the short focal point end arrangement, a distance (L_{3T}) between the third and fourth lens bands in the

long focal point end, a distance (L_{3C}) between the third and fourth lens bands in the macro mode substantially meet the following inequality:

$$0.25 < (L_{3C} - L_{3W}) / (L_{3W} - L_{3T}) < 0.50.$$

85. The apparatus according to claim 77, wherein said first to third and fifth lens bands include less than three lenses, said fourth lens band includes four lenses, each of said second, third and fifth lens bands includes at least one non-spherical surface, and the fourth lens band includes more than two non-spherical surfaces.

86. The apparatus according to claim 77, wherein said third lens band includes one lens, and said aperture diaphragm is located at the object side of the third lens band.